

KAWAI

POP KEYBOARD

PH50

OWNER'S MANUAL

Welcome to the sound-creation world of the Kawai PH50 Pop Keyboard.
Be sure to read these instructions so that you will always be able to use your PH50 in optimum conditions
and allow it to demonstrate its exceptional capabilities to the fullest.

SPECIFICATIONS

Keyboard	49 keys
Number of Voices	16 Maximum
Tone Patches	250 (200 Tones/50 Combinations)
Effect	Pitch Bend Up/Down, Vibrato, Forte Sw. (Joy Stick)
Rhythm	30 Patterns Start/Stop, Intro/Fill In, Tempo, Rhythm Volume
Combination Edit	30 Forms Assign, Volume
System	Tune, Transpose, Transmit Channel, Receive Channel, Omni On/Off, Program Change, Pressure On/Off, Pitch Bend On/Off, Modulation On/Off, Volume On/Off, Hold On/Off, Velocity On/Off
Others	Power, Master Volume, MIDI
Jacks	Headphone, L (Mono)/R, MIDI (In, Out), Hold
Display	3 LEDs
Sound System	10 cm × 2
Power Supply	Household power supply (Using AC adaptor PS121) or 6 size C dry batteries
Dimensions (W × D × H)	77 × 29 × 7 (cm) 30 ⁷ / ₈ " × 11 ¹ / ₄ " × 2 ³ / ₈ "
Weight	3.7 kg 8 lbs.

2. POWER SUPPLY

The PH50 can be plugged into ordinary household power outlets or be used with dry batteries. Use the PS-121 AC adapter for connecting this instrument to household power outlets.

To use with dry batteries, open the battery case lid on the rear of the PH50 and insert six size-C batteries into the case, making sure that the polarities (+, -) are correct.

Notes:

- When the batteries are worn, the volume and quality of the sound will be lessened. It is important to change the batteries at that time.
- When you change the batteries, do not use old and new batteries together, or mix batteries of different types.
- If you are not going to use the PH50 for a long time, remove the batteries.

5. COMBINATION

Up to four tones can be combined easily with the COMBINATION function. Before explaining how this works, we shall take a look at some basic examples of combining tones. The principle methods are as follows:

(1) SPLIT

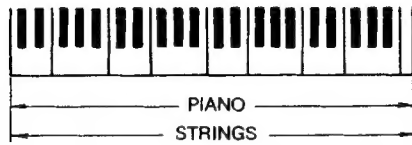
SPLIT literally splits the keyboard up into sound zones, so that different tones can be played depending on the zone.



Look over the Form list on page 8. You will see that Form 9 is a 2-zone split, while Forms 21 and 22 are 4-zone splits.

(2) DUAL

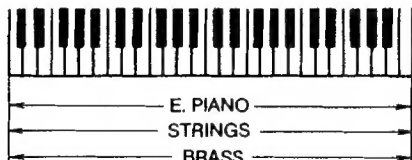
DUAL layers one tone onto another one, across the whole keyboard. By making the pitch of these tones slightly different and playing them together, you can thicken the sound.



Forms 1 through 8 are DUAL forms which assign two tones to the whole keyboard. The form list describes how each of these DUAL forms differ.

(3) LAYER

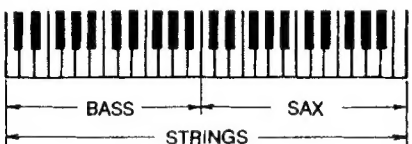
This is the same kind of combination as DUAL, but is called LAYER when three or more tones are used.



Form 12 is a 3-part layer. Forms 19 and 20 are 4-part layers.

(4) MIX

MIX combines the functions of SPLIT and LAYER. Forms 11 and 15-18 are mix forms.



By using the above combinations you can create new sounds and surprising effects that are impossible to obtain with single tones.

The PH50's combinations have been preset so that anyone can enjoy combining sounds effortlessly. Selected to give you optimum flexibility for casual playing or live performance, these 30 preset combinations require only that you choose the tones. These predetermined groupings of zones are called FORMS.

You can assign from two to four tones to a FORM (the number of assignable tones varies depending on the FORM). The location on the keyboard where the respective tones can be assigned are called PARTS. In addition to the zones, the FORM enables different values of DETUNE and TRANSPOSE to be set for each PART. (See the FORM list.)

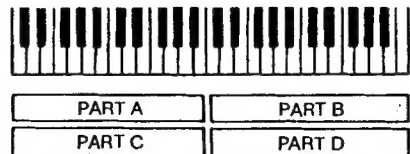
Example 1: FORM 9

FORM 9 is the basic SPLIT type.



Example 2: FORM 26

FORM 26 is a MIX type of SPLIT and DUAL. PARTs A and C have been transposed into a minor key and PARTs B and D have been transposed into a major key.



You can adjust LEVEL (the volume) for each tone when you are assigning the tone for each section. This lets you balance the volume between tones to suit each piece of music you perform.

Listen to a number of COMBINATIONS while looking at the COMBINATION and FORM lists. That is the quickest way to gain an understanding of this powerful capability.

FEATURES

• 200 Great VM Tones

The PH50 is an entirely new type of keyboard. The new VM (Variable Memory) tone generator has been developed especially for KAWAI SYNTHESIZERS, allowing the PH50 to provide 200 rich tones including realistic instrumental sounds and stunning digital effects.

• COMBINATION

If 200 tones are not enough for you, the PH50 provides the COMBINATION function, with which you can select up to four tones from the 200 and assign these in various combined patterns (called FORMs) that go far beyond conventional DUAL or SPLIT functions. You will have countless sound variations at your command. Up to 50 COMBINATIONS can be stored in memory.

• 30 Up-to-date Rhythm Sounds

The PH50 contains its own pop rhythm section with 30 rhythm sounds built in — enough to create a dynamite rhythm performance.

• Joystick

You can add delicate touches to your performance by using the joystick for vibrato and pitchbend, as well as adjusting volume.

• LED Display

The tone and rhythm selections, tempo settings and other information are shown on the Alpha-Numeric LED Display. You can operate the PH50 easily by referring to these numbers and symbols.

1. NAMES OF PARTS AND BASIC OPERATION

■ Front Panel

① POWER switch

Switches the power on and off.

② MASTER VOLUME

Adjusts the volume louder or softer.

③ Joystick

Used for changing the tone.

• FORTE switch

Increases the overall volume when the joystick is shifted toward you (downward). The volume returns to the previous setting when the joystick is shifted toward you once again.

• VIBRATO

Adds vibrato to the sound when the joystick is shifted away from you (upward). The further it is shifted, the greater the vibrato.

• BEND UP

Raises the pitch when the joystick is moved to the right. The further to the right it is shifted, the higher the pitch.

• BEND DOWN

Lowers the pitch when the joystick is shifted to the left. The further to the left it is shifted, the lower the pitch.

④ TONES

Displays the names and numbers of the 200 TONES.

⑤ PATTERNS (rhythm)

Displays the names and numbers of the 30 rhythm patterns.

⑥ LED display

Displays numbers of tones, rhythms, COMBINATIONS, tempo settings, and other system information.

⑦ BANK switch

Used to switch between TONE selection and COMBINATION selection. The BANK switch moves the LED on the right between TONES and COMBINATIONS.

When the TONES LED is lit, PH50 is in the TONE select mode, and the LED display indicates the TONE numbers (001-200).



When the COMBINATION LED is lit, PH50 is in the COMBINATION select mode, and the LED display indicates the COMBINATION numbers (001-050).



For changing the tones or COMBINATIONS, the four-way cursor enables you to select any number you want.

⑧ COMBINATION EDIT section

Used when editing COMBINATIONS. There are three COMBINATION switches:

• FORM

Used to select the FORM that determines the combination of tones. PH50 offers 30 types of FORMs (including splits, layers, and multi-timbral mode).

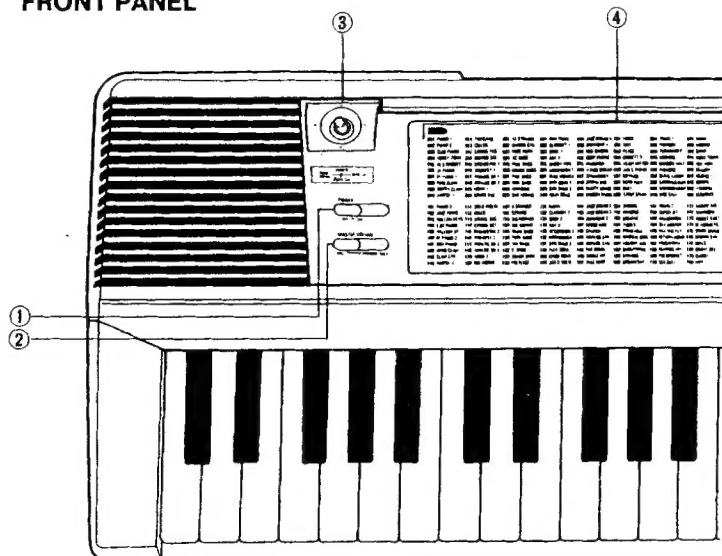
• ASSIGN

Used to select the tones to be combined. Two to four tones can be combined depending on the FORM you select.

• LEVEL

Used to change the volume level of the tones selected.

FRONT PANEL



⑨ RHYTHM section

• RHYTHM switch

Used for selecting rhythm pattern and adjusting tempo and level. Each time the RHYTHM switch is pressed, the LED on its right changes from patterns to tempo to level. When the PATTERNS LED is lit, PH50 is in the rhythm PATTERN select mode and the LED display indicates the PATTERN numbers (1-30).



When the TEMPO LED is lit, PH50 is in the TEMPO set mode, and the LED display indicates the TEMPO (♩ = 50-250).

If a value smaller than 50 is set, the display indicates "SYC", and the rhythm function synchronizes with external MIDI information. When this happens, START/STOP and TEMPO setting are disabled, so care should be taken when setting the tempo value. (Refer to "Enjoying MIDI Functions" for an explanation of synchronized performance.)



When the LEVEL LED is lit, PH50 is in the mode for adjusting the rhythm volume, and the LED display indicates the LEVEL value (0-100).



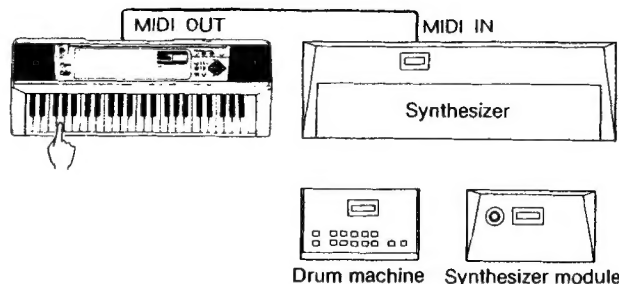
For changing the numbers and values, the four-way cursor enables you to select any number you desire.

7. ENJOYING MIDI FUNCTIONS

MIDI is the world standard used for connecting electronic musical instruments to each other. The following possibilities are open to you when your electronic instrument is equipped with a MIDI interface.

(1) Using the PH50 to play another instrument

(Use a MIDI cable to connect the PH50's MIDI OUT port to the MIDI IN port of brother instrument.)



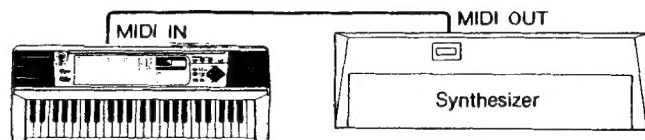
You can use your PH50 to play other instruments such as the K1 synthesizer and the K1m synthesizer module.

By connecting the PH50 to an instrument like the R-50 drum machine, you can add percussion sounds to the 30 rhythm PATTERNS of the PH50, and use the R-50 to program a rhythm completely different from any of the PH50 rhythms.

* Make sure you match the PH50's transmit channel and the receiving instrument's receive channel.

(2) Using the PH50 as a sound source module

(Use a MIDI cable to connect the MIDI OUT port of another instrument to the PH50's MIDI IN port.)



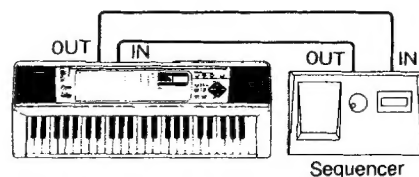
You can play an electronic piano or synthesizer and add the sound of the PH50.

PH50 packs an impressive 200 TONES, 50 COMBINATIONS, and 30 rhythm PATTERNS, so it can be used for expanding sound sources and changing rhythms.

* Make sure you match the sending instrument's transmit channel and the PH50's receive channel (system).

When playing COMBINATIONS, set the transmit channel to CH1.

(3) Using the PH50 with sequencer



By connecting to a sequencer such as the Q-80, PH50 can play five parts simultaneously (four parts plus rhythm).

Example:

Set COMBINATION as follows (same as COMBINATION 27):

* With the PH50, you can select the MIDI CLOCK from SYC, 50-250. Set the PH50 to SYN (SYNCHRONIZATION) when matching the tempo of a drum machine.

- FORM 27
- MIDI CH1 = TONE A : 005 AL's RHODES
- MIDI CH2 = TONE B : 025 PULL BASS
- MIDI CH3 = TONE C : 020 BRASS ENS
- MIDI CH4 = TONE D : 131 FLUTE
- MIDI CLOCK = PH50 Rhythm : 16 FUNK1

Choose from among the 30 rhythm PATTERNS.

Combinations 27 through 30 are set up to show you how to utilize the PH50's multi-timbral capability. Look over numbers 27-30 on the LIST OF COMBINATIONS. You will see that the tones and levels are identical on all of these Combinations. Only the FORMS are different.

Now look at the FORM LIST. You can see that Forms 27-30 are set up for "sequencer." When Form 27 is selected, only the tone assigned to Part A will be generated from the PH50 keyboard. In the preset Combinations 27-30, AL's RHODES is assigned to Part A. Therefore, you will only hear AL's RHODES when you lay your first track.

Once the first track has been recorded into the sequencer, you're ready to overdub a second tone. Set the PH50 to transmit on MIDI channel 2. Select Form 28 which allows only the tone assigned to Part D to be generated from the keyboard. If you select Combination 28, PULL BASS has been assigned to Part B. Therefore, you will only hear PULL BASS when you play the PH50 keyboard. Your first track (AL's RHODES) will play back through the PH50 via MIDI allowing you to overdub the new track in real-time.

To overdub a third track using the tone assigned to Part C, use Combination 29 (or Form 29). Set the PH50 to transmit on MIDI channel 3. Now the tone from Part C will be generated from the keyboard and Part A and B tones will play back via MIDI. Overdub a fourth track using MIDI channel 4 and Combination 30 (or Form 30).

Remember that you are limited to 16 polyphonic notes. If you use percussion, only 12 notes are available.

■ Procedure for recording with a sequencer:

- 1 Connect the PH50 and the sequencer as shown in the illustration.
- 2 Select one of the COMBINATIONS set as above.
- 3 Set the PH50 transmit channel to CH1.
- 4 Set the sequencer CLOCK to EXTERNAL.
- 5 Select the PH50's rhythm and tempo (50-250).
- 6 Make the sequencer ready to start recording.
- 7 Start the PH50 rhythm, and play it to the sound of AL's RHODES.
- 8 Press the PH50 STOP key when the performance is completed.
- 9 Change to factory-set COMBINATION No. 28. (Or just change FORM to No. 28.)
- 10 Set the PH50 transmit channel to CH2.
- 11 Make the sequencer ready to start over dubbing.
- 12 Start the PH50 rhythm, and play it to the sound of PULL BASS.
- 13 Press the PH50 STOP key when the performance is completed.

In this way, the recording is done by changing the numbers of the COMBINATIONS (or FORMS) one at a time for each part. Finally, adjust the LEVEL for TONES A, B, C and D.

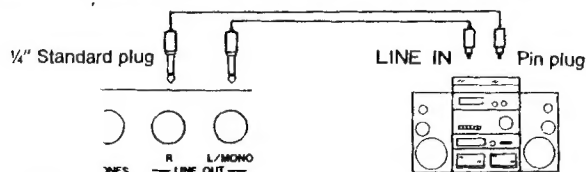
When you play back on the sequencer, the music just recorded with the four parts plus the rhythm will be performed automatically. When you wish to change the TONE, use ASSIGN.

3. CONNECTING TO AUDIO EQUIPMENT

You can perform with a more powerful sound by connecting the LINE OUT jack to audio equipment or amplifier with a standard 1/4" cord.

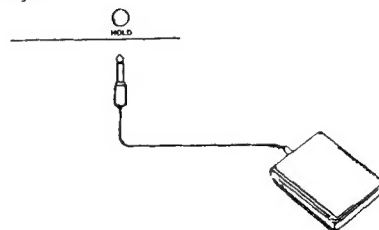
Note:

When you are connecting equipment to the OUTPUT jack, be sure to either turn the power off or turn the volume down as far as it will go.



4. HOLD PEDAL JACK

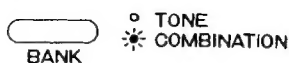
This jack accepts the plug of the optional F-1 foot pedal. When you step on the hold pedal, the notes continue even when you have released your fingers from the keys.



Here's the procedure for editing combinations.

■ Procedure

- (1) Press the BANK switch until the COMBINATIONS LED lights. Then, use the four-way cursor to select the combination you wish to edit (The 3-digit display will show combination numbers).



035

- (2) First, set FORM. Press the FORM switch. The LED display alternately indicates *F-R* (abbreviated display for FORM) and the FORM number.



F-R ↔ 21

- (3) When you have decided which FORM you will use (from the FORM list), set the FORM number using the four-way cursor keys.



19

- (4) Next, assign the tones for each PART. Press the ASSIGN switch. The LED display alternately indicates *A-A* (abbreviated display for ASSIGN — PART A) and the TONE number. In this example, the display indicates that TONE 61 has been assigned to PART A. (The first letter — capital upper or lower case — tells you the PART.)



A-A ↔ 061

- (5) When you have decided which tone to use (from the tone list on the PH50's front panel), set its number with the four-way cursor keys.



049

- (6) Each time you press the ASSIGN switch, the PART changes. Assign the tones to the other PARTs in the same way as you did for PART A.

A-b... Indicates PART B.

A-C... Indicates PART C.

A-d... Indicates PART D.



ASSIGN

A-b ↔ 152

A-C ↔ 120

A-d ↔ 116

- (7) Next, adjust the volume LEVEL. Press the LEVEL switch. The LED display alternately indicates *L-R* (abbreviated display for LEVEL — PART A) and LEVEL value (0-100).



LEVEL

L-R ↔ 100

- (8) Use the four-way cursor keys to change the LEVEL value.



90

- (9) Each time you press the LEVEL switch the PART changes. Change the other PARTs in the same way as you did for PART A.

L-b... Indicates PART B.

L-C... Indicates PART C.

L-d... Indicates PART D.



LEVEL

L-b ↔ 100

L-C ↔ 100

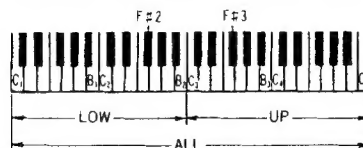
L-d ↔ 90

With this step the operation is completed. Press the BANK switch to return to the previous mode.

Notes:

- You can select FORM, assign tones and adjust LEVEL in any order you wish.
- To return to the factory-set COMBINATIONS, turn the POWER switch on while simultaneously pressing the LEVEL and SYSTEM switches. This resets the PH50 to its original COMBINATIONS.

FORM LIST



No.	FORM	Zone				FORM Contents
		A	B	C	D	
1	DUAL	ALL	ALL	—	—	Two PARTs, A and B, layered one over the other.
2	DETUNED DUAL 1	ALL	ALL	—	—	The pitch of the two layered PARTs, A and B, differs slightly compared with No. 1, to yield a chorus effect.
3	DETUNED DUAL 2	ALL	ALL	—	—	The pitch of the two layered PARTs, A and B, differs more than for No. 2, to yield a chorus effect.
4	DETUNED DUAL 3	ALL	ALL	—	—	The pitch of the two layered PARTs, A and B, differs more than for No. 3, to yield a chorus effect.
5	HONKY TONK DUAL	ALL	ALL	—	—	The pitch of the two layered PARTs, A and B, differs more than for No. 4, to yield a detuned effect.
6	TRANSPOSED DUAL 1	ALL	ALL	—	—	PART B is layered one octave above the key for No. 1.
7	TRANSPOSED DUAL 2	ALL	ALL	—	—	PART B is layered one octave below the key for No. 1.
8	TRANSPOSED DUAL 3	ALL	ALL	—	—	PART B is layered two octaves above and PART A two octaves below the key for No. 1.
9	SPLIT	LOW	UP	—	—	SPLIT of PARTs A and B (PART A on the left, PART B on the right).
10	TRANSPOSED SPLIT	LOW	UP	—	—	SPLIT of the two TONES, A and B, as in No. 9, but with PART B one octave down.
11	MIX 1	LOW	ALL	—	—	PART A is assigned to the left half of the keyboard, and PART B generates sound across the whole keyboard.
12	LAYER 3 PARTS	ALL	ALL	ALL	—	The three PARTs, A, B and C, are layered over each other.
13	TRANSPOSED LAYER 1	ALL	ALL	ALL	—	The same as in No. 12, but PART C is one octave lower.
14	TRANSPOSED LAYER 2	ALL	ALL	ALL	—	The same as in No. 12, but PART B is one octave higher and PART C is one octave lower.
15	MIX 2	LOW	UP	ALL	—	The same as in No. 8, plus PART C extending across the whole keyboard.
16	MIX 3	LOW	UP	LOW	—	The same as No. 9, plus PART C layered over the left half of the keyboard.
17	MIX 4	LOW	UP	UP	—	The same as No. 9, plus PART C layered over the right half of the keyboard.
18	MIX 5	LOW	UP	UP	—	The same as No. 9, plus PART C layered one octave lower on the left half of the keyboard.
19	LAYER 4 PARTS 1	ALL	ALL	ALL	ALL	PARTs A, B, C and D are layered one over the other.
20	LAYER 4 PARTS 2	ALL	ALL	ALL	ALL	The pitch of PARTs A and B of No. 19 differ slightly with the pitch of PARTs C and D.
21	MULTI SPLIT 1	C1~B1	C2~B2	C3~B3	C4~C5	The keyboard is split into four zones.
22	MULTI SPLIT 2	C1~B1 C4~C5	C2~F#2	G2~F#3	G3~B3	The keyboard is split into five zones, and PART A is generated from B1 down and from C4 up.
23	DOUBLE SPLIT	LOW	UP	LOW	UP	PART C is layered above PART A of No. 9, and PART D above PART B, and the pitch of PARTs C and D is slightly different from that of PARTs A and B.
24	TRANSPOSED DOUBLE SPLIT	LOW	UP	LOW	UP	The same as in No. 23, but PARTs B and D are one octave lower.
25	CHORD 1	C1~B3	C1~B3	C1~B3	C4~C5	A major chord can be played with one key.
26	CHORD 2	LOW	UP	LOW	UP	Minor chords can be played with the left half of the keyboard, and major chords with the right half.
27	SEQUENCER 1	ALL	MIDI	MIDI	MIDI	MIDI receive channels are PART A = CH1, PART B = CH2, PART C = CH3, PART D = CH4.
28	SEQUENCER 2	MIDI	ALL	MIDI	MIDI	
29	SEQUENCER 3	MIDI	MIDI	ALL	MIDI	
30	SEQUENCER 4	MIDI	MIDI	MIDI	ALL	

WARNING: This equipment generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with the instruction manual, it can cause interference to radio communications. The rules with which it must comply afford reasonable protection against interference when used in most locations. However, there can be no guarantee that such interference will not occur in a particular installation. If this equipment does cause interference to radio or the related equipment off and on, the user is encouraged to try correct the interference by one or more of the following measures:

- reorient the receiving antenna.
- move the receiver away from the instrument.
- plug the instrument into a different outlet so that it and receiver are on different branch circuits.
- consult the dealer or a qualified service personnel.

This instrument has been certified to comply with the limits for a class B digital apparatus, pursuant to the Radio Interference Regulations, C.R.C., c. 1374.

Cet instrument a été certifié conforme avec les limites pour un appareil numérique de la classe B relatives au Règlement sur le brouillage radioélectrique, C.R.C., ch. 1374.

6. SYSTEM

The functions related to TUNE, TRANSPOSE and MIDI all come under the heading of SYSTEM. Each of these functions is outlined in the table below. The LED display alternately indicates the symbol for the function and the set value. Use the four-way cursor to change the set values.

Function	Display	Set Value	Explanation
TUNE		-50~50	Fine-tunes the overall pitch of the PH50.
TRANSPOSE		-12~12	Changes the overall pitch of the PH50 in half-tone steps. The key can be changed easily for performing.
TRANSMIT CHANNEL		1~16	Sets the MIDI transmit channel.
RECEIVE CHANNEL		1~16	Sets the MIDI receive channel. * COMBINATION is set to CH1 and cannot be changed. However, COMBINATIONS using FORMs 27-30 are set to CH1-4.
OMNI ON/OFF		on/off	Sets whether or not PH50 will receive all the MIDI channels simultaneously.
PROGRAM CHANGE		off	PROGRAM CHANGE information is not received.
		nrA (NORMAL A)	The PROGRAM CHANGE numbers and the corresponding TONE/COMBINATION numbers are as shown on the right.
		nrB (NORMAL B)	
		scr (SECTION A)	The PART set to the same MIDI channel as the receive data receives the PROGRAM CHANGE. The TONE/COMBINATION numbers corresponding to the PROGRAM CHANGE numbers are as shown on the right.
		scB (SECTION B)	
PRESSURE		on/off	Sets whether or not PH50 will receive PRESSURE information.
PITCH BEND		on/off	Sets whether or not PH50 will receive PITCH BEND information.
MODULATION		on/off	Sets whether or not PH50 will receive MODULATION information.
VOLUME		on/off	Sets whether or not PH50 will receive VOLUME information.
HOLD		on/off	Sets whether or not PH50 will receive HOLD information.
VELOCITY		on/off	Sets whether or not PH50 will receive VELOCITY information.

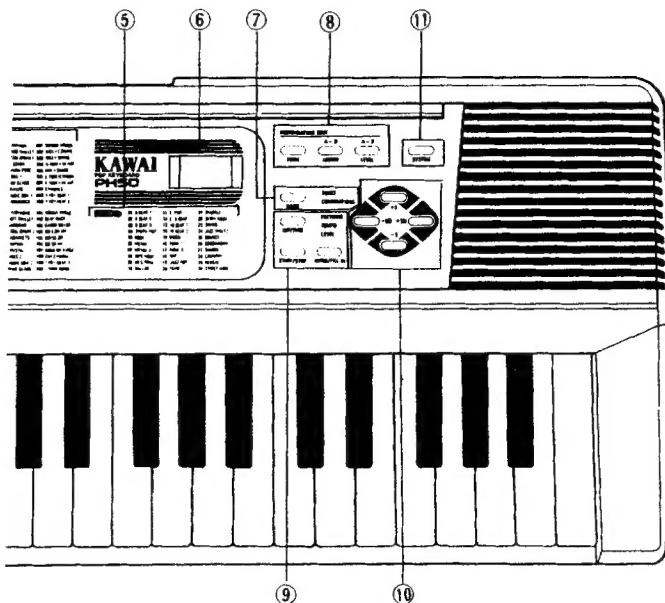
CARE AND MAINTENANCE

• Powerful MIDI functions

Just as the tone selection is on a par with that offered by pro-level synthesizers, so are the MIDI functions. By using a MIDI sequencer you can unleash the full potential of the variable multitimbral functions.

* Variable multitimbral function: When multiple tones are simultaneously played, this function automatically redistributes voices that are not in use so that the number of the simultaneous voices per tone at a time requires no restriction, allowing you to efficiently use the maximum voices available.

- Never place the PH50 in direct sunlight or near heaters and air-conditioners.
- Never insert anything into the spaces between the keys. If by chance something does get into the instrument, pull the power cord out of the wall socket and contact the store where you bought the PH50. If you use the PH50 when something has fallen or spilled into it, the instrument may become damaged.
- Never take the PH50 apart, as you could receive an electric shock and also damage the instrument. Contact the store where you purchased the PH50 if you want it adjusted or serviced.



• START/STOP switch

Press to start or stop the rhythm pattern.

• INTRO/FILL IN switch

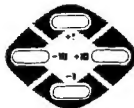
Used to insert an introduction or fill in. When this switch is pressed while the rhythm function is stopped, the rhythm section will start in after the intro pattern. When this switch is pressed during performance, a fill in (variation on the rhythm) is inserted.

⑩ FOUR-WAY cursor

Used when changing any of the values or numbers of the modes.

- +10: Values will change in increments of 10.
- +1: Values will change in increments of 1.
- 1: Values will change in decrements of 1.
- 10: Values will change in decrements of 10.

When the cursor key is held down the values will continue to change. In the ON/OFF mode, pressing +10 or +1 selects ON, and pressing -10 or -1 selects OFF.



⑪ SYSTEM switch

Used when deciding the TUNE, TRANSPOSE and MIDI functions. The following functions can be set with this switch:

• TUNE

Enables fine tuning and is used when matching the pitch to other instruments.

• TRANSPOSE

Changes the pitch in half-tones. This function is handy for changing keys during performance.

• MIDI transmit channel

Sets the MIDI transmit channel.

• MIDI receive channel

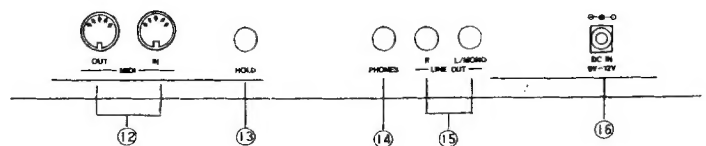
Sets the MIDI receive channel.

- Omni mode: Toggles omni mode on/off.
- Program change: Sets the range for tone change.
- Pressure
- Pitch bender
- Modulation
- Volume
- Hold pedal
- Velocity

These functions toggle MIDI receive on and off.

* For details of these functions, see the section on "SYSTEM"

■ Rear Panel



⑫ MIDI

Used for connecting to other MIDI instrument or a personal computer.

- IN Input terminal for external MIDI information
- OUT Output terminal for this instrument's MIDI information

⑬ HOLD

Used for connecting to a foot pedal. When the foot pedal is pressed, the sound continues even if the fingers stop touching the keys.

⑭ PHONES

Used for connecting headphones.

⑮ LINE OUT

Used for sending the PH50 sound to audio equipment, amplifiers, or tape recorders.

⑯ DC IN

Used to connect the plug from the 9-12V AC adaptors such as PS-121.